

Figure 1
Scheme For The Synthesis Of N-Methyl Piperazine

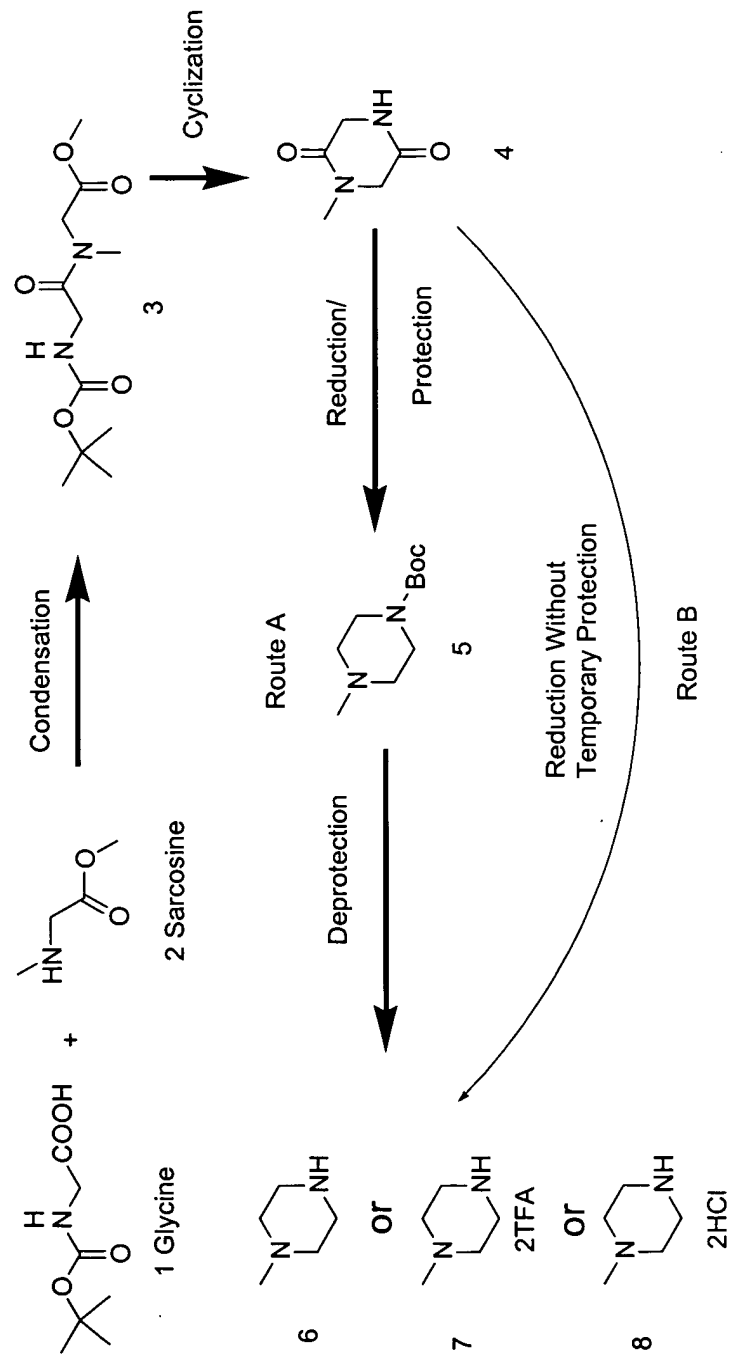


Figure 2A

Scheme A For The Synthesis Of N-Methyl Piperazine Acetic Acids

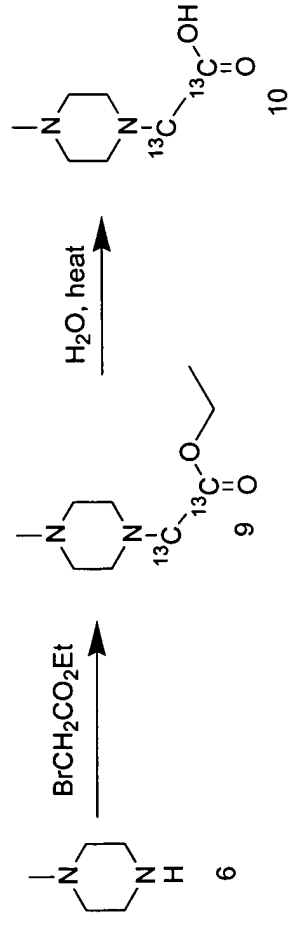


Figure 2B

Scheme B For The Synthesis Of N-Methyl Piperazine Acetic Acids

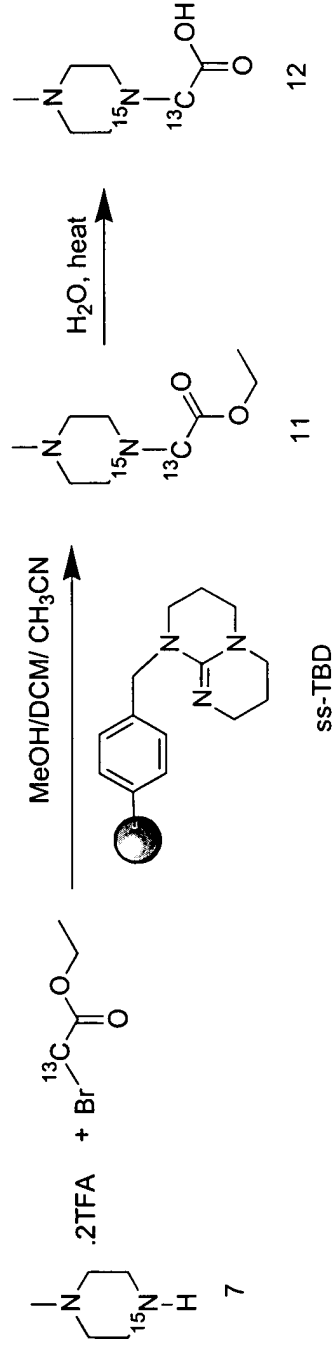


Figure 2C

Scheme C For The Synthesis Of N-Methyl Piperazine Acetic Acids

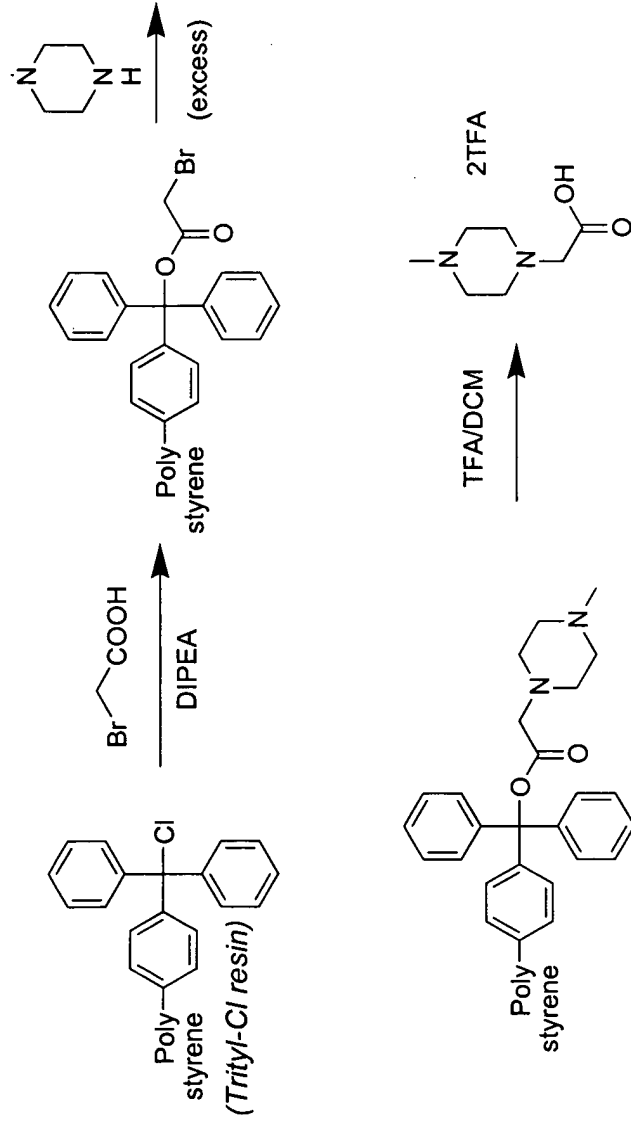


Figure 3A

Scheme A For The Synthesis Of ^{18}O Labeled N-Methyl Piperazine Acetic Acids

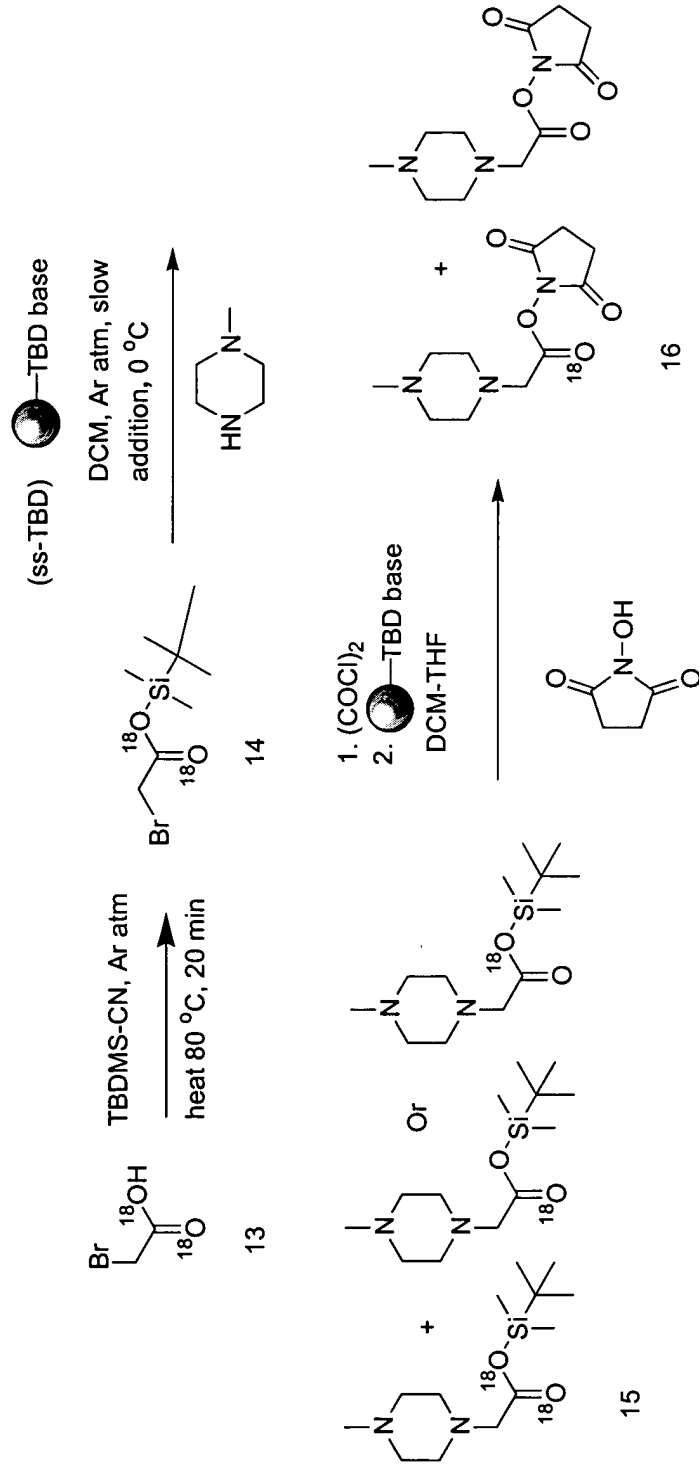


Figure 3B

Scheme B For The Synthesis Of ^{18}O Labeled N-Methyl Piperazine Acetic Acids

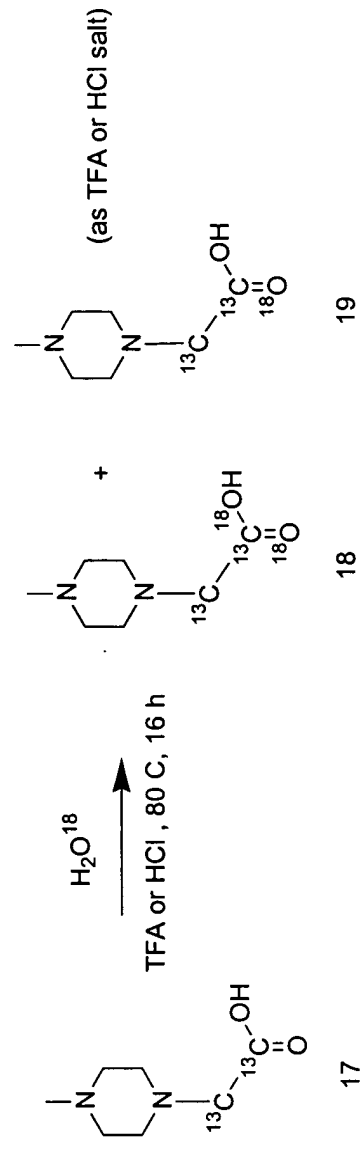


Figure 4A

Scheme A For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Imidazolid Formation

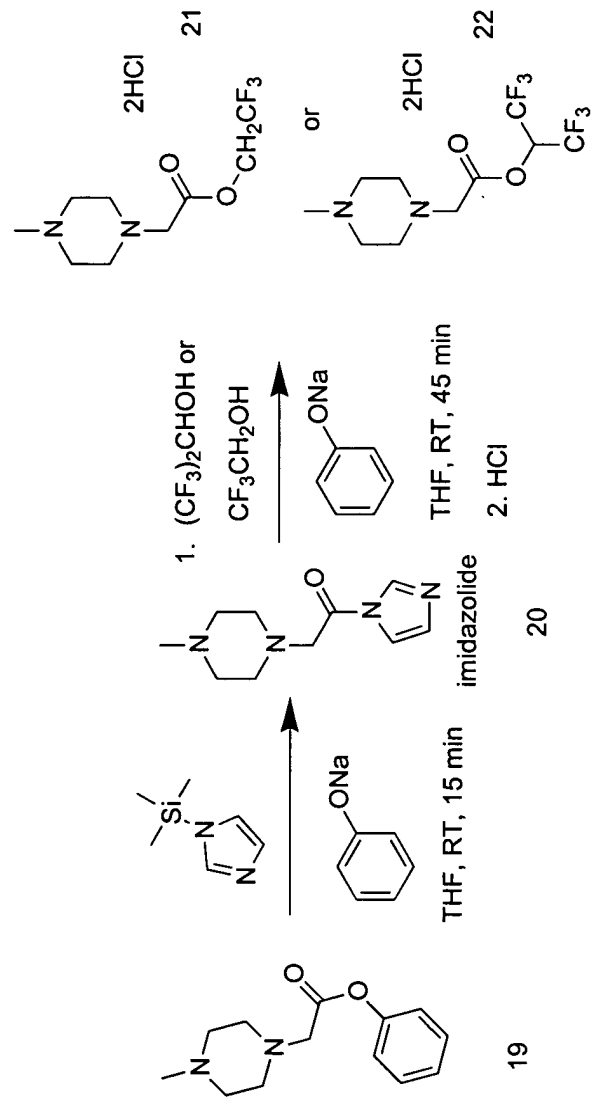


Figure 4B

Scheme B For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Oxallyl Chloride

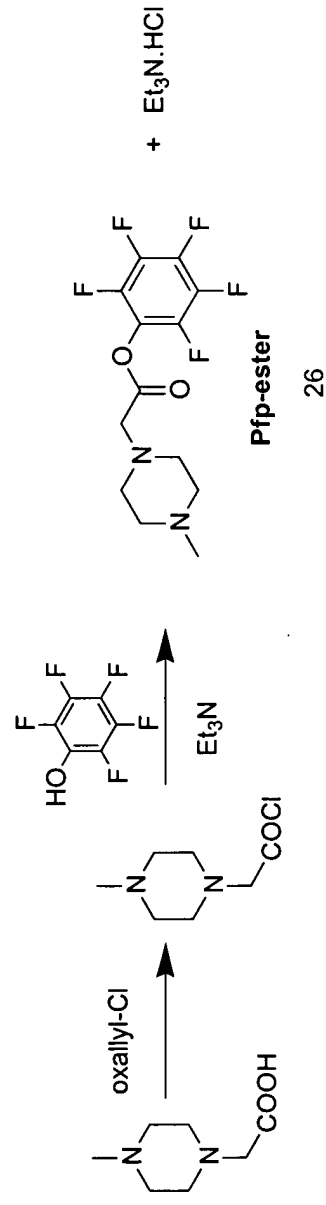
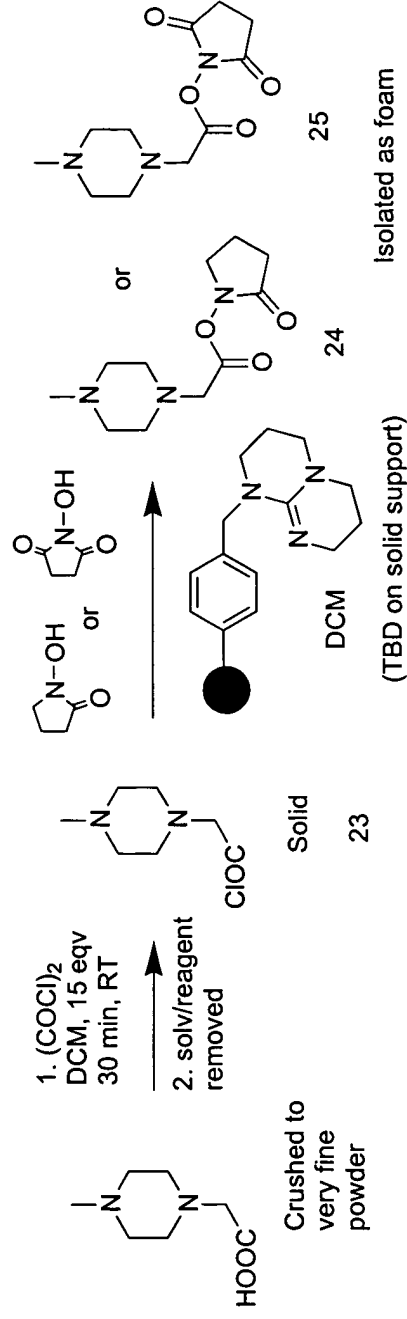


Figure 4C

Scheme C For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Trifluoroacetate Ester

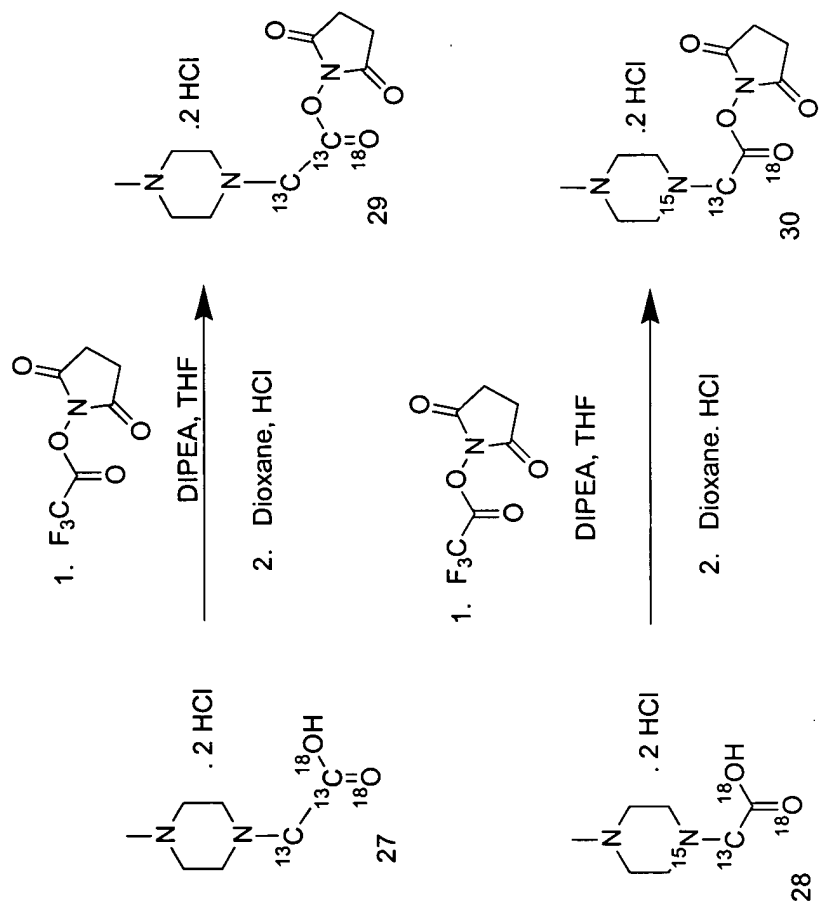
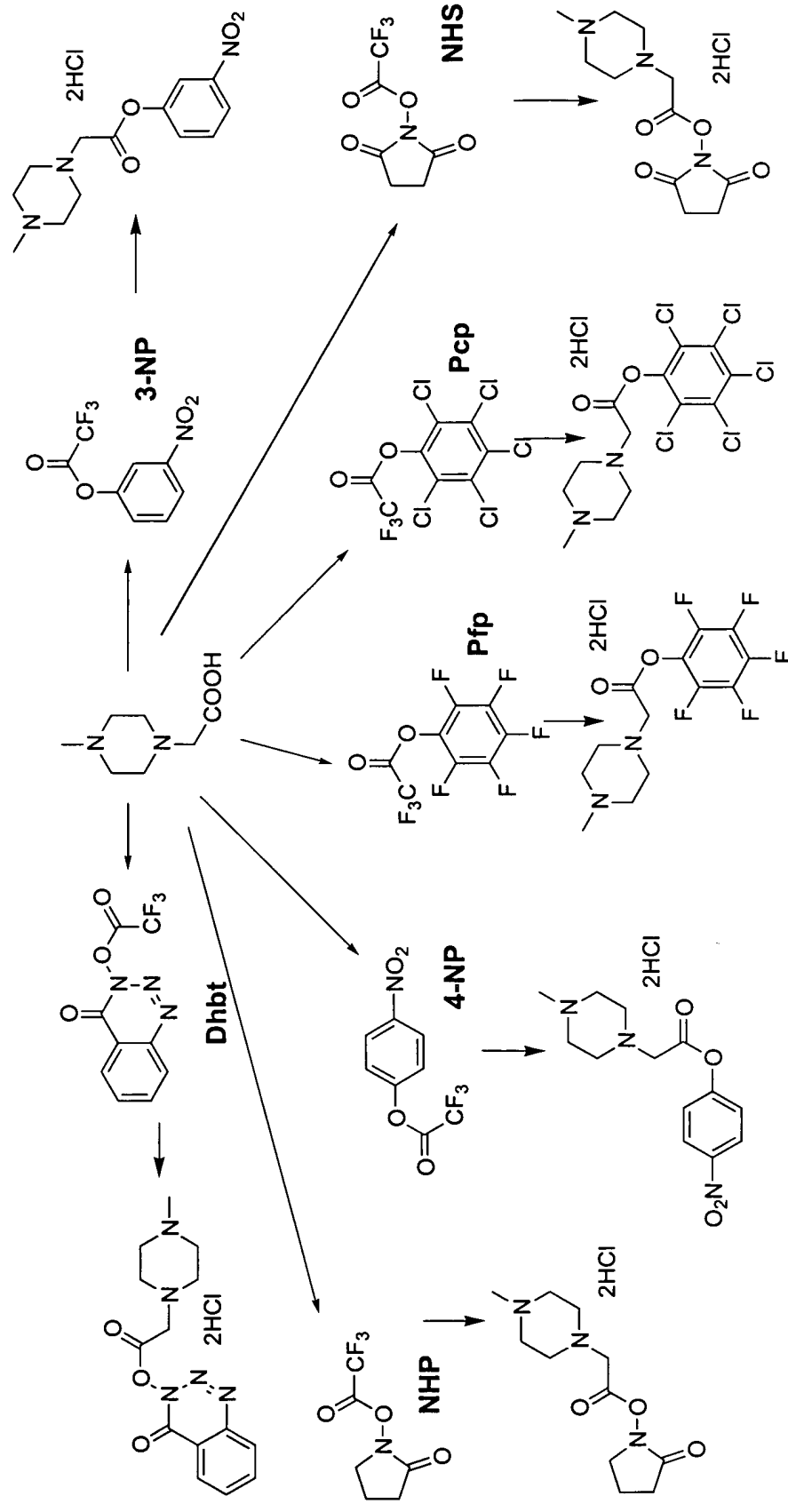


Figure 4D

Scheme For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Trifluoroacetate Esters



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Isotopic Pathway For Prepared N-Methyl Piperazine Acetic Acids

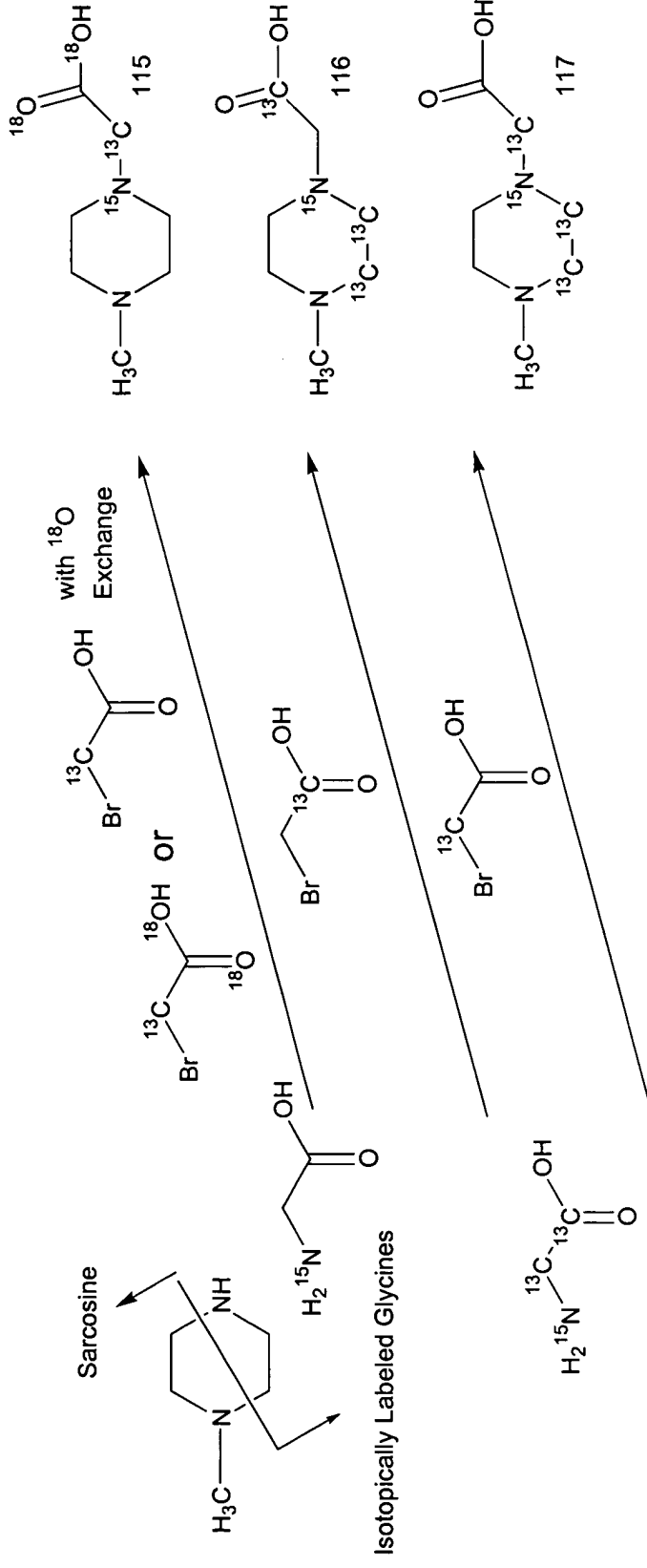
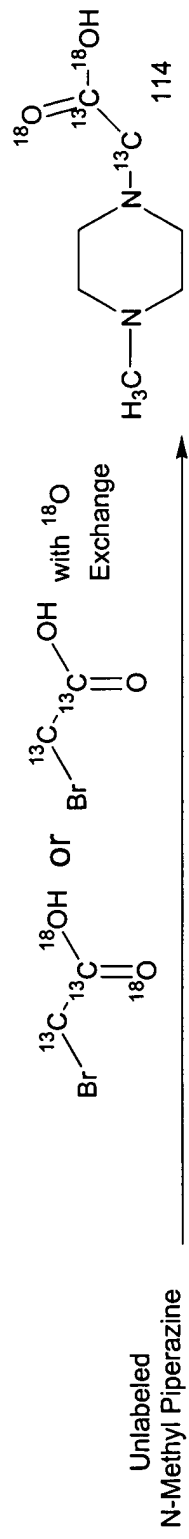
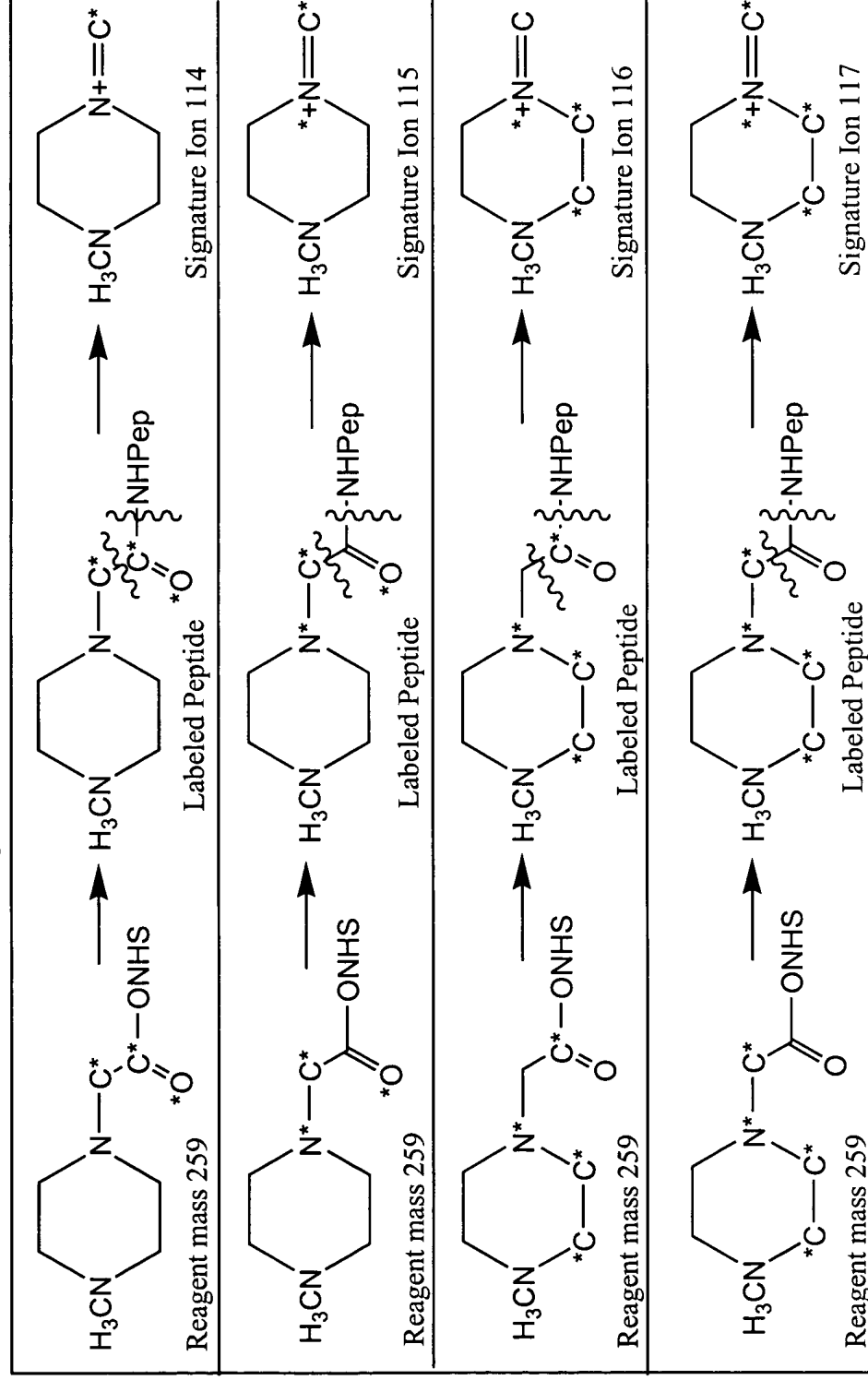



Figure 5B

Fragmentation of the Isobaric Label Set



NHS = N-hydroxysuccinimide

 = Fragmentation Point

Stars indicate "heavy" isotopes
 $N^* = {}^{15}\text{N}$; $C^* = {}^{13}\text{C}$; $O^* = {}^{18}\text{O}$
 Pep = peptide